

Amendment
Serial No. 10/079,464
Attorney Docket No. 011703

AMENDMENTS TO THE CLAIMS

Listing of claims:

This listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently Amended): A method of terminating a bus, comprising steps of:

connecting a chip type terminal resistor to one end of a bus formed on an insulative substrate for transmitting a digital signal;

providing in the vicinity of said terminal resistor an insulator having a larger dielectric loss angle at least in the frequency region of said digital signal than said insulative substrate, wherein

 said insulator is adapted to absorb and dissipate high frequency electromagnetic energy of high harmonic frequency components of said digital signal and of apparent high frequency components associated with transition time, said high frequency electromagnetic energy entering said bus and reaching said one end in said vicinity.

2. (Original): The method of terminating a bus according to claim 1, wherein

 said insulator includes a glass material which contains a modified ionized additive.

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3. (Original): The method of terminating a bus according to claim 1, wherein
said insulator includes a thermosetting organic material containing a hydroxyl radical.

4. (Withdrawn): A terminal resistor comprising:
a glass substrate which contains a modified ionized additive and has a large dielectric loss angle;
a resistive film formed on one surface of said glass substrate; and
a pair of electrodes formed on the opposite ends of said resistive film.

5. (Withdrawn): A method of manufacturing a terminal resistor, comprising steps of:
preparing a glass substrate which contains a modified ionized additive and exhibits a large dielectric loss angle;
forming on one main surface of said substrate a metallic film serving as a resistive film;
forming a metallic electrode layer superposed on said metallic film;
forming electrodes which are spaced apart at given intervals, by patterning said metallic electrode layer to form a block; and
cutting said block in the longitudinal direction along the center lines of said metallic electrodes to form elongate blocks, and cutting said elongate block in the transverse direction at given intervals.

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6. (Currently Amended): A wiring substrate, comprising:

an insulative substrate;

a multiplicity of paired transmission lines formed on said insulative substrate;

terminal chip resistors connected between the terminal ends of the respective paired transmission lines;

insulators [[9]] each formed to cover one terminal resistor, said insulator having a larger dielectric loss angle than said insulative substrate at least in the frequency range of digital signals to be transmitted.

7. (Currently Amended): A wiring substrate, comprising:

an insulative substrate;

a multiplicity of paired transmission lines formed on said insulative substrate;

terminal chip resistors connected between the terminal ends of the respective paired transmission lines;

insulators each formed to cover a respective terminal resistor and terminal ends of respective paired transmission lines, said insulator having a larger dielectric loss angle than said insulative substrate at least in the frequency range of digital signals transmitted by said transmission lines.

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8. (Original): The wiring substrate according to claim 6 or 7, wherein

each of said insulators is a mixture of glass powder containing at least a modified ionized additive and an organic resin.

9. (Original): The wiring substrate according to claim 6 or 7, wherein

each of said insulators is a thermosetting organic material containing a hydroxyl radical.

10. (Original): The wiring substrate according to claim 6 or 7, wherein

each of said insulators is a mixture of glass powder containing a modified ionized additive and a thermosetting organic material containing a hydroxyl radical.

11. (Original): The wiring substrate according to claim 6 or 7, wherein each of said terminal resistors comprises:

a glass substrate containing a modified ionized additive and having a dielectric loss angle which is greater than that of said wiring substrate;
a resistive film formed on one surface of said glass substrate; and
a pair of electrodes formed on the opposite ends of said resistive film.

12. (Withdrawn): A method of manufacturing a wiring substrate, comprising steps of:

preparing an insulative substrate having thereon paired transmission lines;

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mounting and connecting a terminal chip resistor with the terminal ends of paired transmission lines;

preparing a sticky organic potting resin solution having a larger dielectric loss angle than said insulative substrate at least in the frequency range of digital signals to be transmitted by said transmission lines;

dropping said sticky organic potting resin solution onto said terminal resistors and the vicinities thereof for potting; and

hardening said organic potting resin.

13. (Original): A wiring substrate, comprising:

an insulative substrate including predetermined regions which have a larger dielectric loss angle at least in the frequency region of pulse signals transmitted than the rest regions of said insulative substrate;

paired transmission lines having terminal ends in said respective predetermined regions of said insulative substrate;

terminal chip resistors each connected between the terminal ends of respective paired transmission lines.

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14. (Original): The wiring substrate according to claim 13, wherein

each of said predetermined regions of said insulative substrate extends to the terminal sections of respective paired transmission lines.

15. (Original): The wiring substrate according to claim 13 or 14, wherein

each of said regions of said insulative substrate having said large electric loss angle is formed of a mixture of glass powder containing a modified ionized additive and an organic resin.

16. (Original): The wiring substrate according to claim 13 or 14, wherein

each of said regions of said insulative substrate having said large dielectric loss angle is formed of a thermosetting organic material containing a hydroxyl radical.

17. (Original): The wiring substrate according to claim 13 or 14, wherein

each of said regions of said insulative substrate having said large dielectric loss angle is formed of a mixture of glass powder containing at least a modified ionized additive and an organic thermosetting material containing a hydroxyl radical.

18. (Original): The wiring substrate according to claim 13 or 14, wherein each of said terminal resistors comprises:

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a glass substrate containing a modified ionized additive and having a dielectric loss angle which is greater than that of said wiring substrate;
a resistive film formed on one surface of said glass substrate; and
a pair of electrodes formed on the opposite ends of said resistive film.

19. (Withdrawn): A method of manufacturing a wiring substrate, comprising steps of:
preparing a pre-hardened thermosetting insulative substrate;
forming holes at predetermined positions of said insulative substrate, each hole having a predetermined size;
forming a pre-hardened thermosetting insulative slab member which has a greater dielectric loss angle at least in the frequency region of the digital signal transmitted than that of said insulative substrate;
dicing said insulative slab member into individual embedding members having predetermined dimensions to fit in the respective holes of said insulative substrate;
embedding and heating said embedding members in the respective holes to form mixed insulation type substrate which has predetermined regions of a larger dielectric loss angle at least in the frequency region of digital signals transmitted than the rest of said substrate;
forming paired transmission lines such that the terminal ends of the respective paired transmission lines are located in the respective predetermined regions of said mixed insulation type substrate; and

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placing and connecting terminal chip resistors between the terminal ends of respective paired transmission lines.

20. (Withdrawn): The method of manufacturing a wiring substrate according to claim 19, wherein said holes are integrated to a common hole for said multiplicity of paired transmission lines.

21. (Withdrawn): The method of manufacturing a wiring substrate according to claim 19, wherein said holes are integrated to a common hole which corresponds to the respective terminal ends and terminal sections of the respective paired transmission lines.

22. (Currently Amended): A method of terminating a bus, comprising steps of:
connecting a chip type terminal resistor to one end of a bus ~~provided~~ formed on an insulative substrate for transmitting a digital signal; and
providing in the vicinity of said terminal resistor an insulator mixed with a magnetic material,

wherein said insulator is adapted to absorb and dissipate high frequency electromagnetic energy in said vicinity of high harmonic frequency components of said digital signal and of apparent high frequency components associated with frequency time, said high frequency electromagnetic energy entering said bus and reaching said one end.

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23. (Original): A wiring substrate, comprising:

an insulative substrate;

a multiplicity of paired transmission lines formed on said insulative substrate;

terminal chip resistors each connected between the terminal ends of the respective paired transmission lines; and

insulators formed to cover the respective terminal resistors and the terminal sections of said paired transmission lines connected with said terminal resistors, said insulators being made of a mixture of a magnetic material and an organic resin.

24. (Withdrawn): A method of manufacturing a wiring substrate, comprising steps of:

preparing an insulative substrate having thereon paired transmission lines;

mounting and connecting terminal chip resistors between the terminal ends of the respective paired transmission lines;

preparing a sticky organic potting resin solution mixed with a magnetic material;

dropping said sticky organic potting resin solution onto at least said terminal resistors and the vicinities thereof for potting; and

hardening said organic potting resin.

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25. (Original): A wiring substrate, comprising:

an insulative substrate having insulative members which are formed at predetermined regions thereof and made of a mixture of a magnetic material and an organic resin; paired transmission lines having their terminal ends positioned in said predetermined sections of said insulative substrate; and terminal chip resistors each connected between the terminal ends of the respective paired transmission lines.

26. (Withdrawn): A method of manufacturing a wiring substrate, comprises steps of:

preparing a pre-hardened thermosetting insulative substrate; making holes at predetermined locations of said insulative substrate, said holes having a predetermined size; forming a pre-hardened thermosetting insulative slab member made of a mixture of a magnetic material and an organic resin; dicing said insulative slab member into individual embedding members having predetermined dimensions to fit in the respective holes of said insulative substrate; embedding and heating said embedding members in the respective holes to form mixed insulation type substrate which has predetermined regions of a large magnetic loss angle;

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forming paired transmission lines such that the terminal ends thereof are located in said respective predetermined regions; and

placing and connecting a terminal chip resistor between the terminal ends of the respective paired transmission lines.